REMARKS

(1) Claims 20, 22-26 and 33 are pending in this application, of which claim 20 has been amended, and claim 33 has been added.

(2) Claim 20 was rejected under 35 U.S.C. §112, first paragraph, as failing to comply with the written description requirement. Item 1 of the Office Action. The Examiner states that the thickness of the thin resistance layer of 0.025 to 0.2μm is not found nor apparent in the pages referred by the Applicants, *i.e.*, page 13, lines 16 to 20; page 17, lines 15-16; and Table 1 at page 18. Item 1 of the Office Action.

The Applicants disagree with the Examiner. However, claim 20 has been amended to delete the limitation previously incorporated, and to newly incorporate a limitation that "the thin resistance layer has an average thickness of 2.3 to 18.0 mg/dm^2," whose support is found in page 17, lines 9-10; and Table 1 at page 18 of the specification. The rejection should be withdrawn.

(3) Claims 20 and 22-26 were rejected under 35 U.S.C. §103(a) as being unpatentable over Atobe (JP 59-50190). Item 2 of the Office Action.

(i) The specification describes that the amount of nickel electrodeposition (mg/dm^2) is evaluated as the plating thickness (page 13, lines 16 to 20); and that 89 mg/dm^2 corresponds to about 1μm" (page 17, lines 15-16). In amended claim 20, the upper limit of the claimed average thickness is 18.0 mg/dm^2," which is calculated as about 0.2 μm.

(ii) As argued in the Response filed on March 3, 2009, Atobe discloses "1.0μm" as the thickness of the plating layer in Example 1. The thickness disclosed by Atobe is 5 times more than the upper limit of the claimed range.

Claim 20 requires that "applying current...to prepare a circuit board material." On the contrary, Atobe discloses an electroplating bath for "high-class accessories" or "decorative components." *See* page 2, lines 2-4; and page 5, the last paragraph of the translation of Atobe. One skilled in the art will not consider high-class accessories or decorative components as a circuit board material.

Furthermore, in case of a thickness range of "1 to 4 μm" as disclosed by Atobe, a fine board cannot be produced. When the thickness is 1 μm or more, the limits of line and space are 200um/200 μm (line/space) as a circuit pattern. On the contrary, where the thickness is 0.2μm (18.0 mg/dm^2) as required in claim 20, a circuit pattern of 100un/100 μm (line/space) or less can be produced. In producing a circuit pattern, the conductive metal foil and Ni-P layer are subject to etching at the same time. The Ni-P layer is much harder, thereby taking more time in etching than the conductive metal foil. Therefore, a conductive metal foil with a thick NiP layer is not appropriate in using it as a circuit board material. One skilled in the art will not consider that the material disclosed by Atobe can be used as a circuit board material.

In addition, the Ni-P plated layer of the invention recited in claim 20 is very thin layer which has moderate surface roughness which reflects the roughness of the conductive metal foil (Rz) to obtain good adhesive strength of the substrate.

Since the purpose and the function of the Ni-P plated layer of the invention recited in claim 20 are completely different from those of Atobe's Ni-P plated layer, claim 20 is not obvious over Atobe.

(iii) Claim 26 requires "etching the conductive metal foil to make a circuit pattern." On the contrary, Atobe discloses an electroplating bath for "high-class accessories" or "decorative components." *See* page 2, lines 2-4; and page 5, the last paragraph of the translation of Atobe. One skilled in the art will not apply the material disclosed by Atobe to an etching in order to make a circuit pattern. One skilled in the art will, rather, consider not exposing the Atobe's material to a corrosive solution such as an etching solution.

Furthermore, claim 26 requires that an insulating material is adhered to the thin resistance layer. Therefore, the Ni-P plated layer of the invention of claim 26 does not serve as a surface layer in the circuit board material or circuit pattern. On the other hand, Atobe's Ni-P layer serves as a surface layer having a decoration purpose, with a mirror surface. One skilled in the art does not consider that the Atobe's surface layer is masked or used as internal layer by adhering an insulating material to the Atobe's surface layer. Adhering an insulating material to Atobe's Ni-P layer serving as a surface layer for the purpose of decoration would undermine the purpose taught by Atobe. The invention of claim 26 is taught away from Atobe. Therefore, claim 26 is not obvious over Atobe.

(4) Claims 20 and 22-26 were rejected under 35 U.S.C. §103(a) as being unpatentable over Rice et al. (U.S. Patent No. 4,888,574) in view of Kazanovtse et al. (WPI Derwent, vol 29) further in view of Applicant's own prior art admission. Item 3 of the Office Action.

The Ni-P plating layer of Kazanovtse et al. is a hard plating layer which has the thickness of 8 to 10 μm. As explained *supra*, the upper limit of the average thickness of the thin resistance layer is about 0.2 μm. The thickness of Ni-P plating layer of Kazanovtse et al. is about 100 times more than the claimed "average thickness." The purpose by Kazanovtse et al. is to obtain a thick film without porosity. On the contrary, Ni-P plating layer of the present invention is a thin film having a thickness of 0.2um or less in order to obtain a high resistance. Also, the thin film of the claimed invention has uniform resistance. A uniform Ni-P thin film is formed in the claimed invention. In Table 1 of the specification, the uniformity of the invention relates to the value of "3σ resistance." Neither Kazanovtse et al. nor Rice teach forming a layer having a uniform resistance. The purpose of the claimed invention is completely different from the teaching by Kazanovtse et al.

The Examiner admits that Rice teaches away from the usage of sulfate salts, and that Rice does not teach or suggest the usage of nickel plating baths that contains sulphamate ions. Item 3 of the Office Action. Nonetheless, the Examiner relies on Rice in view of the claimed temperature range and pH value range recited in claims 23 and 24. There is no basis to combine Kazanovtse et al. with Rice since Rice not only provides no teaching/suggestion but also teaches away from using sulfate salts, as admitted by the Examiner. The Examiner might have considered that one skilled in the art may speculate using similar compounds in similar

conditions, but without actual tests, one skilled in the art cannot recognize whether the conditions disclosed by Rice can be actually used in the invention of Kazanovtse et al. The Examiner merely combines independent teachings.

Moreover, the Examiner admits that Kazanovtse teaches nickel sulphamate amounts lower than those claimed. Page 4 of the Office Action. The Examiner, however, relies on the Applicants description at page 7, lines 3-7, where the specification describes that "the concentration of nickel sulfamate should be ranges ordinarily used in sulfamic acid plating baths." First, the description at page 7, lines 3-7 is not Applicant's admission of prior art, but the description of the finding by the present inventors. Second, the description of the specification does not mean that the concentration of nickel sulfamate was ordinarily used in sulfamic acid plating baths. Even if the concentration of the claimed nickel sulfamate, found by the inventors of the present application, overlaps with the concentration of sulfamic acid ordinarily used, such description does not provide any basis that conventional condition for sulfamic acid is expected to be effective to the conditions for nickel sulfamate. The Examiner merely combines independent teachings. Reconsideration of the rejection is respectfully requested.

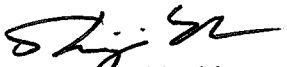
(3) New claim 33 recites that "the conductive metal foil has a surface roughness Rz of 1.0μm to 2.5μm."

Claim 33 is not obvious over the cited references.

(4) In view of above, Applicants submit that the claims, as herein amended, are in condition for allowance. Applicants request such action at an early date. If the Examiner believes that this application is not now in condition for allowance, the Examiner is requested to contact Applicants' undersigned representative at the telephone number indicated below to arrange for an interview to expedite the disposition of this case. If this paper is not timely filed, Applicants respectfully petition for an appropriate extension of time. The fees for such an extension or any other fees that may be due with respect to this paper may be charged to Deposit Account No. 50-2866.

Respectfully submitted,

WESTERMAN, HATTORI, DANIELS & ADRIAN, LLP



Shuji Yoshizaki
Patent Agent
Registration No. 62,785
Telephone: (202) 822-1100
Facsimile: (202) 822-1111

SY/mt